

Appln No. 10/581,782
Amdt date August 6, 2008
Reply to Office action of April 21, 2008

Amendments to the Drawings:

The attached annotated sheet of drawings is a includes changes to FIG. 12. The attached replacement drawing of FIG. 12 replaces the original informal sheet including FIG. 12.

Attachment: Replacement Sheet

Annotated Sheet to Show Changes Made

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REMARKS/ARGUMENTS

Claims 1, 3-19 are pending. Claims 1, 3-5, 7, and 13-15 are amended and claim 2 is cancelled.

The Examiner refuses to consider the Webster reference cited in the April 21, 2008 IDS on the ground that a textbooks is identified, but only a copy of the index is provided. The Examiner requests that a copy of the portion of the book that is relevant be provided for consideration. Enclosed is an IDS including a copy of the relevant portion of the book.

The drawings are objected to because "the key for FIG. 12 indicates solid black as being both the nitride and the metal materials," and that the "support structure" of claim 1 & "contact member" of claim 2" must be shown. A replacement drawing for FIG. 12 correcting the key is enclosed.

With respect to lack of illustration of "support structure" of claim 1 and "contact member" of claim 2, Applicant respectfully submits that those features have been identified in the text and drawings. For example, in FIG. 12, reference 1216 has been described in the sentence bridging pages 10 and 11 as the "middle plate or cantilever 1212 is a free-standing structure supported only at the center by a post 1216.". Furthermore, reference 1218 has been described on page 11, first paragraph as "beyond a pre-determined threshold, the boss ring structure 1218 on the glass die or device base 1204 will come into contact with the middle plate or cantilever 1212 and cause it to deflect.".

Furthermore, 108 in FIG. 1 has been described on page 7, first paragraph as "the middle plate 106 is a free-standing structure supported only at the center by a post 108." Similarly, 112 has been described in the same paragraph as "beyond a pre-determined threshold, a boss ring structure 112 etched below the thick diaphragm 102 will come into contact with the middle plate 106 and cause it to deflect." Accordingly, Applicant respectfully submits that the relevant features of the claims have been shown in the drawing and thus respectfully requests that the above objections to the drawings be withdrawn.

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The drawings are also objected to on the grounds that the reference characters 102 and 1210, have both been used to designate the diaphragm.

Applicant respectfully submits that it is permissible to use different reference characters to designate different exemplary embodiments of the diaphragm. It is clear from the description, that the structures shown in FIG. 1 and FIG. 12 are different embodiments, and therefore it is appropriate to use different reference characters for the two different embodiments.

Consequently, Applicant respectfully requests that the above objections to the drawings be withdrawn.

Claims 3, 4 and 13 are objected to under U.S.C: 112, first paragraph, on the grounds that the specification fails to enable the claimed invention

However, through out the specification, for example, in page 11, first paragraph, it is described that "beyond a pre-determined threshold, the boss ring structure 1218 on the glass die or device base 1204 will come into contact with the middle plate or cantilever 1212 and cause it to deflect.", and "since the middle plate 1212 is arranged as a cantilever, it magnifies the small deflection in the diaphragm 1210 and does enable small changes in pressure on the diaphragm 1210 to be detected.".

Therefore, in FIG. 12(b), the diaphragm 1210 is at the "bottom" of the drawing, and has been created by the backside wet etch as described. On the other hand, the structure 1204 at the "top" is the device base in this embodiment. As a result, the specification enables the invention, as claimed by claims 3, 4 and 13.

In view of the above remarks, it respectfully requested that the above objections to claims 3, 4 and 13 be withdrawn.

Claims 1-12 and 14-19 are rejected under U.S.C. 102(b), as being fully anticipated by Gianchandani (U.S. 6,460,234); and claims 1-6, 14, 15 and 18 are rejected under U.S.C. 102(e), as being anticipated by Hsu et al. (U.S. 6,604,425). Applicant respectfully submits that all of the pending claims are patentable over the cited references.

Amended independent claim 1 includes, among other limitations, "a contact member moveable relative to the cantilever member under deflection of the diaphragm member and

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separated by a gap from the cantilever member in a state when no pressure is applied to the diaphragm member." None of the cited references, alone or in combination teach or suggest the above limitation.

More specifically, in FIG. 25 of Gianchandani cited by the Examiner, the diaphragm structure 93 is always in contact with the skirt sections 92. This is particularly highlighted for example in column 7, lines 32 to 34, where it is described that "A sealed cavity in this case is formed by securing a further diaphragm structure 93 to the top of the skirt sections 92." Clearly, in order to achieve a sealed cavity, there cannot be a "gap."

Therefore, Gianchandani does not teach "a contact member moveable relative to the cantilever member under deflection of the diaphragm member and separated by a gap from the cantilever member in a state when no pressure is applied to the diaphragm member" and thus claim 1 is patentable over the cited references.

Amended independent claims 14 and 15 each include features similar to the features discussed above with reference to amended claim 1, therefore independent claims 14 and 15 are not anticipated by Gianchandani either and are also patentable over the cited references.

With respect to Hsu reference, the disclosed pip 16 seems to be always in contact with both the upper plate 18, and the diaphragm 6, as disclosed, for example, in FIGs. 2a and 2b. Furthermore, column 4, lines 3-7 describes that "Under some circumstances upper plate 18 might cease to press against diaphragm 6, and for such circumstance, pip 16 is preferably adhesive in nature."

Similarly, column 5, lines 10 to 14 describe that "It is desirable for some application that pip 16 be at adhesively placed, or indeed be a bit of adhesive material; but in some instances upward pressure from upper plate 18 may keep pip 16 in compression so that upper plate 18 follows the movement of diaphragm 6."

Therefore, Hsu makes it clear that it is essential that the pip 16 is always in contact with the upper plate and the diaphragm 6.

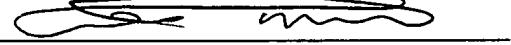
In short, independent claims 1, 14 and 15 define a novel and unobvious invention over the cited references. Dependent claims 3-13 and 16-19 are dependent from claims 1, 14 and 15,

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respectively and therefore include all the limitations of their respective independent claims and additional limitations therein. Accordingly, these claims are also allowable over the cited references, as being dependent from allowable independent claims and for the additional limitations they include therein.

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition for allowance, and accordingly, reconsideration and allowance are respectfully requested.

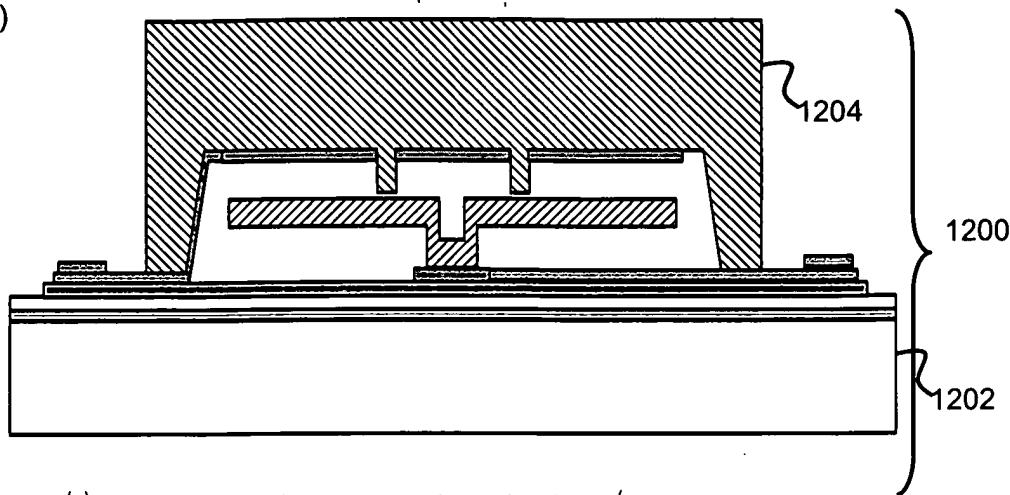
Respectfully submitted,
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By 
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626/795-9900

RRT/clv

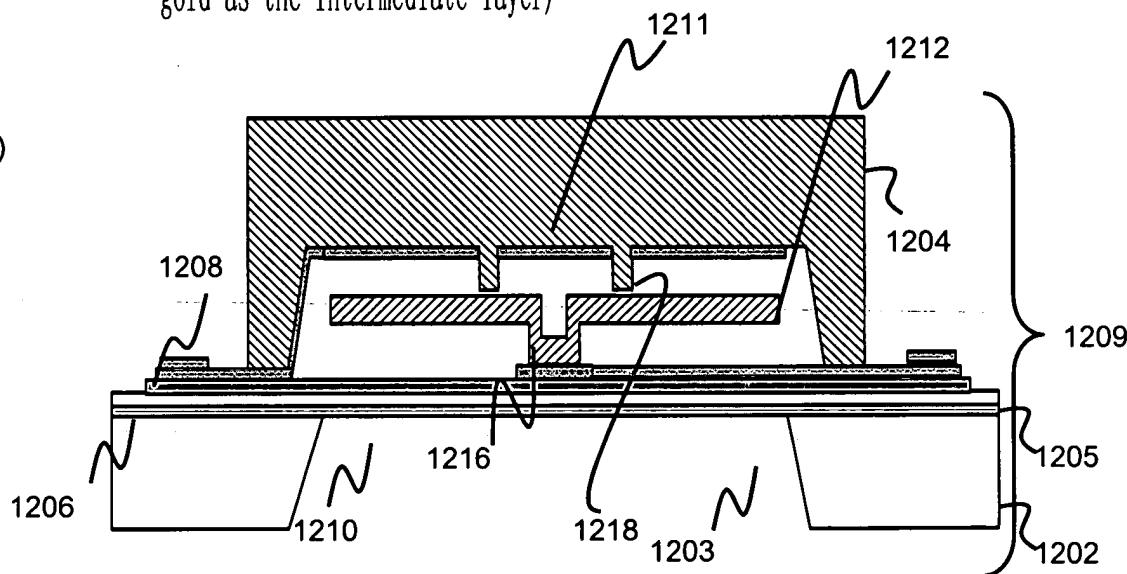
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a)



(A). Silicon to glass intermediate bonding (using gold as the intermediate layer)

b)



(B). Backside wet etch using BHF (Etching stops at Silicon dioxide layer)



Nitride



Poly Si



Silicon dioxide



Glass



Metal



Silicon

Figure 12